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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,951	03/03/2004	Kurt Friedrich Brandstadt	DOC 0084 PA	1997
<div>7590 01/26/2007 DINSMORE & SHOHL LLP One Dayton Centre Suite 500 One South Main Street Dayton, OH 45402-2023</div>			<div>EXAMINER PROUTY, REBECCA E</div>	
			<div>ART UNIT 1652</div>	<div>PAPER NUMBER</div>
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	01/26/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/791,951

Applicant(s)

BRANDSTADT ET AL.

Examiner

Rebecca E. Prouty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-16 and 18-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Applicant's election without traverse of proteases as the hydrolase enzyme, silicon as X in the formula of the claims and compounds having the structure $(R^1)_{4-n}X(OR^2)_n$ as the reactants in the reply filed on 10/10/06 is acknowledged.

Claims 2 and 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/10/06.

Claims 1, 3-16, and 18-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 16, 31 and 32 (from which claims 3-15 and 18-30 depend) is indefinite in the definition of R^4 as the definition includes compounds having the formula $-(OXR^4_2)_y-OXR^4_3$ and thus defines the group by itself. A definition of R^4 cannot include R^4 .

Claims 12 and 27 recite "wherein the reaction is conducted in ... a solventless condition." It is unclear how an enzymatic reaction can be conducted without a solvent.

Claims 1, 3-16, and 18-32 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling

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for methods of forming an organic siloxane by hydrolysis and condensation of an organic silane selected from trimethylethoxysilane, $(\text{Me}_3\text{SiO}(\text{CH}_2\text{CH}_2\text{O})_4\text{CH}_3)$, 3-glycidopropyldimethylethoxysilane, 1,1-dimethyl-1-sila-2-oxacyclohexane, and methyltriethoxysilane with trypsin or by condensation of the corresponding organic silanols with trypsin, does not reasonably provide enablement for forming any organic compound by reacting any organic reactant or organic intermediate reactant as defined in claims 1, 16, 31, and 32 with any hydrolase. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claims 1, 3-16, and 18-32 are so broad as to include forming any organic compound by reacting any organic reactant as defined in claims 1, 16, 31, and 32 (i.e., a variety of silicon or germanium containing compounds in claims 1 and 3-15, a variety of siloxanes in claims 16, and 18-31 or a variety of silanols in claim 32) with any hydrolase (claims 1, 5-16, and 20-32), any protease (claims 3 and 19) or trypsin (claims 4 and 20). The claims are not commensurate in scope with the enabled invention with regard to the scope of organic reactants (or intermediate reactants) used, the scope of organic compounds

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formed, nor the scope of enzymes utilized as catalyst. The specification provides evidence that most hydrolase enzymes tested did not catalyze the hydrolysis or condensation of any organic silane at all, despite testing several different enzymes (see particularly example 1). Furthermore, not only did most hydrolases tested not catalyze the instant reactions, there is clearly no unifying characteristics present in the few that were successful that could be used for the selection of other suitable enzymes from the enormous number of known hydrolases (or even known proteases). In fact even different sources of trypsin had distinctly different abilities to catalyze the claimed reactions. Furthermore, the specification provides substantial evidence that trypsin will not catalyze the hydrolysis and/or condensation of most of the enormous number of organic silanes or corresponding silanols included in the scope of the claims showing successful reactions with only trimethylethoxysilane, $(\text{Me}_3\text{SiO}(\text{CH}_2\text{CH}_2\text{O})_4\text{CH}_3)$, 3-glycidopropyldimethylethoxysilane, 1,1-dimethyl-1-sila-2-oxacyclohexane, and methyltriethoxysilane and provides absolutely no evidence that any corresponding germanium containing compounds can be used. The group of successful reactants do not share any unifying characteristics with which a skilled artisan could reasonably predict what other organic

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silanes or corresponding silanols could be used. As there are virtually an infinite number of possible combinations of enzymes and organic reactants encompassed in the claims, the specification shows that the vast majority of combinations are unsuccessful, and the specification provides absolutely no guidance for the selection of others combinations which are successful, it would require undue experimentation to practice the full scope of claimed methods.

Claims 1, 3-16, and 18-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

These claims are directed to methods of using a genus of organic reactants and a genus of hydrolases to produce a genus of organic compounds. The specification teaches the structure of only a few representative species of such organic reactants and hydrolases which can be successfully used in the claimed methods. Moreover, the specification fails to describe any other representative species by any identifying characteristics or properties for the selection of suitable organic reactants

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and hydrolases for use in the recited methods. Given this lack of description of representative species encompassed by the genus of the claim, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 9-16, 20, and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Friedrich (WO02/22842, see CA 2,422,600 provided herewith for an English translation thereof).

Friedrich teaches the formation of organic siloxanes from a variety of organic silanes using an enzymatic hydrolysis and

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condensation with a lipase in aqueous or organic solvents at neutral pHs and temperatures of about 25°C. The organic silanes used included phenyltriethoxysilane and tetrabutoxysilane. As such Friedrich anticipates all of the instant claims.

Claims 1, 3-5, 9-16, 18-20, and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Cha et al.

Cha et al. teach the formation of phenylsilsesquioxane from tetraethoxysilane using an enzymatic hydrolysis and condensation with the proteases trypsin, papain or silacatein in aqueous buffer at neutral pHs and temperatures of 20°C. As such Cha et al. anticipate all of the instant claims.

Claims 1, 5, 9-16, 20, and 24-32 are rejected under 35 U.S.C. 102(a or e) as being anticipated by Sakkab (US PG-PUBS 2003/0779156).

Sakkab teaches the formation of organic siloxanes from a variety of organic silanes using an enzymatic hydrolysis and condensation with a modified subtilisin in aqueous or organic solvents at neutral pHs and temperatures of about 25°C. The organic silanes used include dimethyldimethoxysilane. As such Sakkab anticipates all of the instant claims.

Claims 1, 3-16, and 18-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Bassingale et al. (J.

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Inorganic Biochem.) or Bassingale et al. (Polymer Preprints, 2003)

Bassingale et al. (J. Inorganic Biochem.) and Bassingale et al. (Polymer Preprints, 2003) teach the formation of hexamethyldisiloxane from trimethylethoxysilane using an enzymatic hydrolysis and condensation with 40 mg/mL trypsin in aqueous buffer at pH 7 and temperatures of 25°C. As such Bassingale et al. (J. Inorganic Biochem.) and Bassingale et al. (Polymer Preprints, 2003) anticipate all of the instant claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca E. Prouty whose telephone number is 571-272-0937. The examiner can normally be reached on Tuesday-Friday from 8 AM to 5 PM. The examiner can also be reached on alternate Mondays

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (571) 272-0928. The fax phone number for this Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rebecca Prouty
Primary Examiner
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